STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

96-023

INSTRUCTIONS

1. The preparing activity must complete blocks 1,2, 3, and 8. In block 1, both the document number and revision letter should be given.
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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER **JIEO CIRCULAR 9008**	2. DOCUMENT DATE (YYMMDD) 930630

3. DOCUMENT TITLE
NITFS Certification Test & Evaluation Program Plan

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

Update JIEO 9008 to comply with MIL-STD-2500B (NITFS 2.1).

5. REASON FOR RECOMMENDATION

6. SUBMITTER

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SUGGESTED ADDITIONS TO JIEO CIRCULAR 9008 FOR NITFS INTEROPERABILITY

MODIFY / ADD TO THE TABLE OF CONTENTS:

CHAPTER 5: NITFS COMPLIANCE CRITERIA

CHAPTER 6: NITFS INTEROPERABILITY CERTIFICATION CRITERIA
6-1
6-2
6-3

ADD TO THE LIST OF APPENDICES:
TBD

ADD TO THE LIST OF TABLES:
TBD

ADD TO THE LIST OF NITFS FORMS:
CTE-5 NITFS Interoperability Profile
TBD

ADD TO THE EXECUTIVE SUMMARY:
TBD

1-1 PURPOSE. Replace in entirety to read:

This document establishes the National Imagery Transmission Format Standard (NITFS) Certification Test and Evaluation (CTE) Program for achieving and sustaining NITFS compliance of digital imagery products and systems. In addition to NITFS compliance, this plan provides the approach, methodology and metrics for certifying the degree of Compatibility, Integration, and Interoperability (CII) among digital imagery systems, both those fielded and those being developed and/or acquired for field use. It describes the procedures for registration of imagery products tested for compliance with the NITFS and for CII certification of imagery systems. It also prescribes NITFS CTE Program policies, defines roles and responsibilities of participating organizations, and provides certification funding guidance.

1-2 SCOPE

This document contains technical and adminstrative information regarding NITFS test planning, execution, and reporting. Test and registration of products, equipment, and systems which comply with the NITFS and are shown to be interoperable is a vital component of the DOD's and IC's overall United States Imagery System (USIS) compatibility, interoperability and integration objectives. This test program plan provides details on:

TBD (modified/updated list from JC9008)

1-3 REFERENCES. Add the following references:

DODD 4630.5 Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems, 12 November 1992.

DODI 4630.8 Procedures for Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems, 18 November 1992.

CJCSI 6212.01A Compatibility, Interoperability, and Integration of Command, Control, Communications, Computers and Intelligence (C4I) Systems, 30 June 1995.

JIEO CIRC 9002 Requirements Assessment and Interoperability Certification of C4I and AIS Equipment and Systems, 23 January 1995.

USIS 2000 ARCHITECTURE

1-6 DEFINITIONS: Add the following definitions:

CII CERTIFICATION. Same as Interoperability Certification.

COMPLIANCE REGISTRATION.

COMPATIBILITY. The capability of two or more items or components of equipment or material to exist or function in the same system or environment without mutual interference. (CJCSI 6212.01A)

INTEGRATION. The arrangement of systems in an architecture so that they function together in an efficient and logical way. (CJCSI 6212.01A)

INTEROPERABILITY. The ability of the systems, units, or forces to provide services to and accept services from other systems, units, or forces, and to use the services so exchanged to enable them to operate effectively together. The conditions achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users. (CJCSI 6212.01A)

INTEROPERABILITY CERTIFICATION. Confirmation by DISA that a C4I/AIS system has undergone appropriate testing; that the applicable standards and requirements for compatibility, interoperability, and integration have been met; and a system is ready for joint and/or combined use. (CJCSI 6212.01A)

PRODUCTION SYSTEM (from USIS 2000)

EXPLOITATION SYSTEM (from USIS 2000)

LIBRARY SYSTEM (from USIS 2000)

TACTICAL SYSTEM (from ?) those systems required to operate in a 'challenged' environment. Particularly 'comms challenged', e.g. avail comms channel characterized by low-bandwidth, poor bit-error performance, simplex/HDX mode, etc. I.E. those channels over which TCP/IP based protocols used in strategic systems do not work.

1-7 TEST PROGRAM CONCEPT. Add/Modify to include the following:

The DOD's and IC's long-term objective is to establish a global imagery system infrastructure that can accommodate the widest possible range of missions and operational scenarios by allowing users to enter the infrastructure at any time or place in the execution of any mission. The DOD and IC intend to develop, acquire, and deploy imagery systems and equipment that meet essential operational needs of US forces, that are compatible with existing and planned imagery systems and other electronic equipment, and that are interoperable with other US and Allied nations' funtionally related imagery and automated information systems and equipment.

1-8 TEST PROGRAM POLICIES. Add/Modify the following:

Certification of imagery systems and equipment for Compatibility, Interoperability and Integration (CII) is the culmination of successful completion of a number of test related activities. As descriptin JC 9002 and CJCSI 6212.01A, CII testing will be conducted throughout a system's life cycle. JITC will use CII certification testing data collected from a number of sources in making the independent assessment upon which CII ceritification will be based. Those systems, consisting of components which are compliant with the designated standards profile(s) and have been shown through testing to be interoperable with other systems/components, have a significant advantage in substantiating CII certification.

Descriptions of system types: production, exploitation, library, tactical. (Pull these descriptions from USIS 2000 best as possible)

Establishing cert requirement when there is a MENS or ORD

Establishing cert rqmt when there is no MENS or ORD

TBD

CHAPTER 4. Replace entire chapter as follows:

CHAPTER 4

NITFS REGISTRATION

4-1 GENERAL

The NITFS CTE Facility will establish and maintain a series of registers summarizing the outcome of successfully completed compliance and CII certification testing. The scope of the registers is limited to the digital imagery functions defined within the NITFS, related production and exploitation standards and specifications, and the means (communications and physical media) used to exchange digital imagery among imagery capable systems. The appearance of a multi-functional system on the registers only pertains to the degree of compliance and/or CII certification of the digital imagery capabilities implemented by the listed system. It does not Imply full CII Certification for the entire system.

4-2 NITFS COMPLIANCE REGISTERS

A. NITFS 'SYSTEM' COMPLIANCE REGISTER. The NITFS 'System' Compliance Register identifies those government sponsored systems that have successfully completed applicable NITFS compliance testing for the type of system (e.g. production, library, exploitation, tactical, etc.) being registered.

B. NITFS 'FORMAT AND TACO2' COMPLIANT PRODUCT REGISTER. This register identifies products which support both the NITF format and TACO2 that have successfully completed NITFS compliance testing. These products may be sponsored by either the government or by commercial developers or vendors.

C. NITFS 'FORMAT ONLY' COMPLIANT PRODUCT REGISTER. This register identifies products which have successfully completed compliance testing for the NITF format, but do not support TACO2.

D. NITFS 'COMPONENT' COMPLIANT PRODUCT REGISTER. The NITFS Component Register provides a means to register components/products that implement a portion of the NITFS, but do not of themselves constitute a complete NITFS capability. For example, a JPEG compression card, a CGM implementation, a TACO2 implementation, or a specialized interface unit may be tested for compliance with applicable portions of the NITFS .
If compliant, these products may be added to the component register.

4-3 NITFS CII CERTIFICATION REGISTER

The NITFS CII Certification Register identifies those government sponsored systems that have successfully completed applicable CII Certification testing for the type of system (e.g. production, library, exploitation, tactical, etc.) being registered.

A. INTEROPERABILITY PROFILE. An interoperability profile is maintained for each registered system. The proforma for the interoperability profile is shown in Appendix B, NITFS Form CTE-5.

B. INTEROPERABILITY MATRICES. A set of interoperability matrices is maintained in the register to identify pair-wise interoperability among registered systems that has been successfully demonstrated or tested.

4-4 REGISTER ACCESS

Copies of the registers are available bycontacting the NITFS CTE Facility. The registers can also be accessed on-line via the following Universal Resource Locators (URLs):

http:/www.itsi.disa.mil/ismc/index.html
http:/jitc-emh.army.mil/nitf/nitf.htm

4-5 REGISTRATION POLICIES

A. NITFS CONFIGURATION ITEMS. The registers contain information about the 'as tested' configuration (both hardware and software) of systems and products being registered. The contents of the register reflect the information shown in Appendix B, NITFS Forms CTE-2 and CTE-3. Any change to the NITFS configuration items (identified by an '*') associated with a registered system or product must be reported to the NITFS CTE Facility for assessment of impact on continued NITFS registration.

B. EXPIRATION OF REGISTRATION. Entries in all registers expire two years from the date of entry. Sponsors can update their registration by submitting a request for re-registration as outlined in Chapter xx, paragraph xx. The NITFS CTE facility will review the requests and determine the degree of testing, if any, needed to update the register entry(s). The re-registration fee will be commensurate with the level of effort required to review the request, conduct additional testing as deemed necessary, and to update the register.

C. WAIVERS. The registers will identify any system waivers or specific test criteria waivers that have been granted for government sponsored systems.

D. TEST ANOMALIES. The registers will identify if there were any unresolved test anomalies at the conclusion of otherwise successful testing. The system or product developer is expected to resolve all anomalies as they are discovered during CTE Facility testing. The CTE facility test team will conduct sufficient regression testing to help ensure modifications made to resolve anomalies have no adverse impact on previously tested functions. Occasionally there may arise a circumstance wherein an anomaly is detected late in the test cycle and may have very minor impact on the overall functionality of the implementation under test. Under such circumstances, the cost, delay, and risk of adversely impacting previously tested features may not warrant fixing the anomaly and conducting regression testing. It may be better to delay the resolution to a follow-on upgrade or releases of the product. In such cases, the register will identify if there are outstanding anomalies awaiting resolution. Those selecting products for field use from the registers should review outstanding anomalies for impact on their intended use of the product.

CHAPTER 5. Change title of Chapter 5 to read:

NITFS COMPLIANCE CRITERIA

CHAPTER 6. Add a new chapter, chapter 6, as follows:

CHAPTER 6

NITFS INTEROPERABILITY CERTIFICATION CRITERIA

6-1 GENERAL

A. SCOPE. The scope of this chapter is limited to the digital imagery functions defined within the NITFS, related production and exploitation standards and specifications, and the means (communications and media) used to exchange digital imagery among imagery capable systems. For multi-functional systems, the CII Certification criteria only pertain to the digital imagery capabilities implemented by the systems being tested.

B. RISK REDUCTION.
[Discuss philosophy of CCE and risk reduction. IOP can never be fully certified; systems are always in a state of change; can't always predict all operating environments a system will be used in; etc.]

6-2 BACKGROUND

Even though a system tested for compliance with applicable standards has a significantly improved potential for interoperating with other systems built to the same standards, there is no guarantee of full or even partial interoperability. The lack of interoperability among compliant systems is largely caused by the variety of implementation options allowed in standards developed in the consensus environment typical of national and international standards bodies. Consequently there is often a need to verify interoperability among separately developed systems, even when built to the same standards. In general, there are three principle approaches taken to test and certify interoperability among automated information systems.

A. TESTING WITH A REFERENCE IMPLEMENTATION. Under this approach, once a system is successfully tested for compliance with applicable standards, it is tested for pair-wise interoperability with a reference implementation. The reference implementation is a controlled implementation known to be compliant with the standards (or, if not fully compliant, deviations from the standards are well-known and impact on testing can be controlled). Although systems successfully tested pair-wise with a reference implementation will have an increased likelihood of mutual interoperability, there is still no guarantee of universal interoperability among the systems.

B. UNIVERSAL PAIR-WISE TESTING. This is the brute force approach for testing interoperability among systems. It provides the highest confidence of mutual interoperability among the successfully tested systems. The approach is to test each system in a pair-wise fashion with every other system with which it must interoperate. For a small group of systems, this approach is feasible. However, as the number of systems increases, the complexity and cost of this approach becomes prohibitive.

C. SELECTED PAIR-WISE TESTING. Selected pair-wise testing represents a compromise between the previous two approaches. It adds greater confidence to testing done only with a reference implementation, but avoids the potentially high cost of universal pair-wise testing. Under this approach, once a system is successfully tested for compliance with applicable standards, it is tested for pair-wise interoperability with a reference implementation and with several other systems which have been likewise tested. Although interoperability among all systems is not directly measured, the probability of mutual interoperability among two independent systems tested separately using this method approaches that of the universal test approach.

6-3 KEY NITFS CII TESTING ISSUES

A. KEY NITFS COMPATIBILITY ISSUES.

B. KEY NITFS INTEGRATION ISSUES.

C. KEY NITFS INTEROPERABILITY ISSUES.

1. File Format
2. Extended Data Products
2. Physical Media Exchange
3. Telecommunications

6-4 NITFS CII REQUIREMENTS

[Flexible. Not pre-determined by test program. Requiring / acquiring authority needs to determine the degree of risk reduction for the fielding intent. This plan just outlines a structure to help define applicable CII rqmts, CCE approach, continuously updated registration of status of CII, contents of registers are certified thru test or demo.]

6-5 NITFS INTEROPERABILITY TEST METHODOLOGY

A. FILE FORMAT.

- CLEVELs
- Compressions
- Annotations
- Text Parsers

B. EXTENDED DATA PRODUCTS.

- Products with Support Data Extensions (SDEs)
- Profile for Imagery Archive Extensions (PIAEs)
- Compressed ARC Digitized Raster Graphics (CADRG)
- Contolled Image Base (CIB)
- Digital Point Positioning Data Base (DPPDB)
- Computer Fusion Metafile (CFM)

C. PHYSICAL MEDIA EXCHANGE.

- Floppy Disk, 5.25"
    - DOS format
    - UNIX format
- Floppy Disk, 3.5"
    - DOS format
    - UNIX format
    - Apple format
- Tape, 8mm
    - TAR format
    - SPID style block format
    - Other
- Tape, Super VHS
    - TAR format
    - SPID style block format
    - Other
- Compact Disk (CD)
    - ISO 9660 ?
    - DOS format file structure
    - UNIX format file structure
    - Apple format file structure

D. TELECOMMUNICATIONS.

- Crypto interfaces
    - STU-3
    - KG-84 A/C
    - KY-68
    - KY-57/58
    - KIV-7
    - Fortenza
- Channel types
    - Point-to-Point Links
    - Broadcast Networks
    - Circuit Switched Networks
    - Packet Switched Networks
    - Message Switched Networks
- Protocols
    - TCP/IP/FTP
    - TCP/IP/SMTP
    - TCP/IP/MIME
    - CDL
    - Link 16
    - TACO2

6-6 NITFS INTEROPERABILITY PROFILE

[Describe structure and use of IOP profile table/proforma to capture a snapshot of a systems capabilities. When the table is blank, it is a proforma. When filled out by system sponsor, it serves as a statment of intended iop capabilities/requirements. When verified through testing, it serves as a certificate of capability. The profile for a particular system is a living document and will likely have all three types of info; e.g. blank filled capabilities, selected/required capabilities, and certified capabilities.]

6-7 NITFS INTEROPERABILITY MATRICES

[Describe structure and use of iop matrix used to summarize the variety and types of other systems a specific system has been demo'd, tested, or otherwise shown some degree of

interoperability with. The matrix should somehow represent the telecoms/media over which files can be exchanged in an interoperable fashion.]

APPENDIX A: Add the following acronyms:

MNS Mission Need Statement

ORD Operational Requirements Document

APPENDIX B: Add a new form, CTE-5 NITFS INTEROPERABILITY PROFILE.

NITFS Interoperability Matrix

System Type:	Tactical		Exploiter		Library		Production	
System Name:	**Send**	**Receive**	**Send**	**Receive**	**Send**	**Receive**	**Send**	**Receive**
Format								
C-LEVEL 04								
C-LEVEL 05								
C-LEVEL 06								
Network								
FIDDI								
ATM								
DIAL-UP								
SWITCH-56								
ETHERNET								
GBS								
MSE CIRCUIT								
MSE PACKET								
SHF RADIO								
SHF SATCOM								
UHF SATCOM								
VHF RADIO								
OTHER								
Protocol								
FTP TCP/IP								
SMTP								
MIME								
UUENCODE								
BASE 64								
OTHER								
X.400/500								
TACO2								
SYNC								
ASYNC								
LINK-16								
CDL								
OTHER								
Crypto								
KG-84								
KY-68								
KiV-7								
STU-III								
KY-57/58								
OTHER								

NITFS Interoperability Matrix

System Type:	Tactical		Exploiter		Library		Production	
System Name:	**Send**	**Receive**	**Send**	**Receive**	**Send**	**Receive**	**Send**	**Receive**
Physical Media								
CD								
ISO-9660								
OTHER								
8-mm TAPE								
TAR								
SPID								
OTHER								
SVHS								
TAR								
SPID								
OTHER								
FLOPPY, 3.5								
DOS								
UNIX								
MAC								
FLOPPY, 5.25								
DOS								
UNIX								
MAC								
OTHER								
Product								
SDE PRODUCT								
CARDG								
CIB								
DPPDB								
OTHER								
Extensions								
PIAE Data								
OTHER								
Services								
Format Conversions								
OTHER								